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OF THE

PROVINCE OF ALBERTA

ALBERTA OIL REVIEW

1952

DEPARTMENT OF ECONOMIC AFFAIRS

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ALBERTA OIL REVIEW

1952

Alberta's oil and natural gas industry set new records during 1952, expanding at a rate that soon will enable Canada to be self-sufficient, in balance, in petroleum for the first time.

The growth of the industry since 1947 has been spectacular. Reserves have been increased 25 times, production potential 15 times, land under production, 10 times and exploration expenditures, 25 times.

Total Alberta crude oil production⁽¹⁾ during 1952 was 58,915,723 barrels, of which the Leduc-Woodbend and Redwater fields made the largest contribution. The Leduc-Woodbend field yielded 17,845,212 barrels and Redwater 23,975,842 barrels.

At the end of December, 3313 crude oil wells were operating in the Province with 3,660 capable of being operated. The number of drilling rigs in operation as the year closed was 158 and during the year 6,631,528 feet were drilled. There were 984 new discoveries during the year, 946 of these new oil producers and 38 new gas producers. A total of 127 geophysical parties were exploring at the end of December. Estimated Alberta crude oil reserves stood at the end of the year between 1,250,000,000 and 1,500,000,000 barrels. Among the fields with large proven reserves are Redwater, estimated as high as 750,000,000 barrels. Leduc-Woodbend with more than 275,000,000 barrels and Wizard Lake which is estimated to contain more than 100,000,000 barrels.

Since its discovery in February 1947, the Leduc field, now covering more than 22,000 acres, has been the centre of attention for more than 40 oil exploration and development companies and, six years later, still is receiving constant scrutiny.

(1) For additional material on Alberta Oil Production see Tables B-H.

Production in the main portion of the field is taken from the Devonian Limestones, which has three section, known as D1, D2 and D3. The D2 and D3 sections provide the production, the D3 being the most prolific. The D2 is encountered at a depth of approximately 5,000 feet and has an average thickness of about 30 feet. The D3 is found at approximately 5,300 feet and averages 38 feet in thickness.

Redwater was discovered on October 3, 1948 when Imperial Oil's Redwater No. 1 well was completed with an initial potential of 1,728 barrels daily from a 140 foot section of D3 reef. Now Canada's largest know oil field, Redwater covers approximately 40,000 acres with production coming from the D3 zone encountered at depths of 3,100-3,300 feet.

Initial development of the Lloydminster field began in 1934 with the first well producing natural gas. Oil was first discovered in 1935 but in uncommercial quantities. The first successful oil production was obtained in 1943. Between September, 1948 and 1950, a shortage of refining capacity together with a restricted market for Bunker "C" fuel resulted in a curtailment of production. During the latter part of 1950, the markets widened and production was increased.

Turner Valley, which for many years was Canada's only major oil field, now is the third largest field, following behind Leduc-Woodbend and Redwater. It is situated approximately 40 miles south-west of Calgary. In 1936, the completion of Turner Valley Royalty No. 1 well established the field as a crude oil producer. The field then was drilled out rapidly and production has been declining gradually since 1942.

1952 DISCOVERIES

The year began with the discovery of the Bonnie Glen reef, six and a half miles south of Wizard Lake. The discovery well hit the D3 first at 6,382 feet and the next 397 feet were highly productive of natural gas and naptha. Below this gas cap, the D3 was found to continue for another 291 feet. This is the record thickness of D3 pay zone yet discovered in Alberta, a total of 688 feet.

In the Pigeon Lake area, Gulf-C. P. R. -Fiveland No. 4 well was completed in September at a depth of 7,380 feet after establishing a total of more than 380 feet of D3 pay zone. About 250 feet of the D3 zone is highly productive of wet gas while the remainder produces light grade crude.

The first discovery in the Nevis field occurred when the Canadian Gulf Oil Company's well, Gulf-Lampert No. 4, entered the D2 porosity at 5,549 feet. Tests of the D2 down to 5,587 feet recovered natural gas at rates up to 8,000,000 cubic feet daily. At deeper levels the gas flow increased to 12,000,000 cubic feet daily and some naptha was recovered. Another well, 3/4 mile south-east of the Gulf-Lampert well, discovered oil in the D2. A 30-minute test of interval 5,646-5,656 feet flowed gas in one and half minutes and oil in eight minutes at an estimated rate of 30 barrels per hour. Total recovery was 450 feet of oil. Later tests at deeper levels recovered oil at an estimated rate of 50 barrels an hour.

What may turn out to be the most important discovery well in the Alberta foothills area since the Pincher Creek discovery of wet gas occurred at Winchell Coulee, near the source of the Little Red Deer River on the eastern edge of the Rocky Mountains about 45 miles northwest of Calgary and ten miles southwest of Cremona.

Discovery of crude oil of 40 degrees A. P. I. gravity was announced toward the end of December, 1952 after the discovery well had drilled to 10,892 feet. At that point it was 200 feet into the Madison limestone, the producing formation at Pincher Creek and Turner Valley. Top of the Madison was contacted at 10,692 feet.

Amerada Petroleums made a promising strike in the Sturgeon Lake area of the Peace River country. This well found only 90 feet of pay zone but it was the first true reef discovery in the Peace River. It demonstrated that the Peace River country was favorable to the growth of the oil-bearing D3 in Devonian times and suggested that if one reef has been found, there are more present.

NATURAL GAS

In 1952, Alberta produced 95,697,432 mcfs. of natural gas with the Turner Valley field providing the largest share of this total. The following table shows comparative production for the years 1952 and 1951.

| <u>Field</u> | <u>1952 mscf</u> | <u>1951 mscf</u> | <u>Increase or mscf</u> | <u>Decrease %</u> |
|-----------------|----------------------|----------------------|-----------------------------|-----------------------|
| Turner Valley | 32,069,085 | 35,720,661 | 3,651,576 | -11 |
| Viking-Kinsella | 17,398,977 | 19,587,222 | 2,188,245 | -12 |
| Leduc-Woodbend | 11,467,399 | 8,367,545 | 3,099,854 | -37 |
| Pakowki Lake | 8,323,838 | 225,110 | 8,098,728 | + 3597 |
| Jumping Pound | 7,439,160 | 4,677,615 | 2,761,545 | + 59 |
| Medicine Hat | 3,628,267 | 3,813,824 | 185,557 | -5 |
| Redcliffe | 1,471,483 | 1,752,046 | 280,563 | -12 |

PRINCIPAL GAS FIELDS

The Ancher Creek field, discovered in 1948, is south of Calgary and extends north from the International Boundary for about 20 miles. The discovery well was drilled to a depth of 12,516 feet to become western Canada's deepest well. Reserves are estimated at 1,680 billion cubic feet of disposable gas *. The high hydrogen sulphide content of the gas indicates the possibility of large sulphur production as a byproduct. Further development of the field will depend on future expansion of natural gas markets.

Although Leduc-Woodbend has been developed primarily as an oil field, it contains the largest accumulation of natural gas yet discovered in the Devonian limestones of Alberta. The average thickness of this gas cap is around 65 feet and is estimated to cover an area of approximately 14,000 acres. There is a non-associated gas reserve in the Lower Cretaceous estimated at 47,000,000,000- 130,000,000,000 cubic feet*, but this gas will likely be held back until most of the oil has been produced. Reserves in the D2 gas cap are estimated at 11 billion cubic feet* while estimated reserves of disposable gas from solution in the D2 oil reservoir are 99 billion cubic feet.

The Medicine Hat gas field has drawn attention since 1890 when a bore hole was sunk in search of coal and recovered a flow of natural gas. The first discovery was made in what is known as the Milk River Sand. The Medicine Hat Sand, which is the principal gas reservoir, was discovered in 1908 when the Canadian Pacific Railway sank a well to 1,000 feet. Estimated reserve is 513 billion cubic feet.

The Cessford field, located in the south-eastern part of Alberta, almost directly east of Calgary, is regarded as the third most important non-associated gas accumulation. There are commercial quantities of gas in the Viking, Blairmore, and Princess(Sunburst) Sands of the Lower Cretaceous. The northern portion of the field known as the Sunnynook offers the more favorable possibilities of commercial production of natural gas from the Viking Sand. Principal gas reserve of the field is in the Blairmore sand.

Discovered in 1914, the Viking-Kinsella field is located 70 miles east of Edmonton. The field produces non-associated natural gas from the Viking Sand of the Lower Cretaceous, a sand which covers approximately 497,000 acres. Average depth of the producing formation is 2,100 feet. Gas from the field is used to supply Edmonton and smaller central Alberta communities. Estimated reserves are 676 billion cubic feet. *

Reserves for the Jumping Pound and Turner Valley fields are estimated at 375 billion cubic feet and 364 billion cubic feet respectively.

* Report of Petroleum and Natural Gas Conservation Board
March, 1952.

THE PEACE RIVER AREA

Some 250 miles northeast of Edmonton is located a group of gas fields which comprise the general Peace River area. This area straddles the Alberta- British Columbia border. These individual fields with their reserves are tabulated below:

| | Recoverable Gas Reserves (M. M. M. cu. ft.) | * | |
|---|---|----|-------|
| Field | | | |
| BRITISH COLUMBIA | | | |
| Fort St. John area | | | |
| 1. Airport Field | 137 | | |
| 2. Charlie Lake Field | 28 | | |
| 3. Fort St. John Field | 1,281 | | |
| Kiskatinaw Field | 43 | | |
| Sunrise Field | 96 | | |
| <hr/> | | | |
| Total British Columbia..... | 1,585 | | |
| ALBERTA | | | |
| Belloy Field | 27 | | |
| Dunvegan(Hamelin Creek)Field | 123 | | |
| Eaglesham Field | 36 | | |
| Gordondale Field | 42 | | |
| Rycroft Field | 57 | | |
| Tangent Field | 283 | | |
| Whitelaw Field | 201 | | |
| Dixonville | } | 50 | |
| Harmon Valley | | | |
| Heart River | | | |
| Little Smoky Lake | | | |
| Normandville | | | |
| Phil Can | | | |
| Valleyview | } | | |
| | | | |
| <hr/> | | | |
| Total Alberta..... | 819 | | |
| ALBERTA AND BRITISH COLUMBIA | | | |
| Pouce Coupe Field | 102 | | |
| Total reserves Peace River area of British Columbia and Alberta..... | | | 2,506 |

* Source: September, 1952, Report, Department of Mines and Technical Surveys, Hume and Ignatieff.

EXPORT OF GAS FROM PEACE RIVER

In June, 1952, the Alberta Government gave permission to Westcoast Transmission Limited to export natural gas from the Alberta fields in the Peace River region. The company has received permission from the Government of Canada to export natural gas from Canada and now is waiting authorization from the Federal Power Commission of the United States of America to import the gas into the U.S.

The company plans to construct a gas pipeline from a point three miles from the Alberta - B. C. border through the interior of British Columbia to a point near the International Boundary about six miles from Sumas, Washington. From here, a branch line will continue to Vancouver and the main line will go south to the United States. A gathering and distribution system, comprising 100 miles of main line and 111 miles of branch line, will be constructed in Alberta to make natural gas available to Grande Prairie, Sexsmith, Spirit River and five other Peace River communities.

The population of the company's proposed market area is 2,650,000 and it is estimated that approximately 1,340 billion cubic feet of natural gas will be required to meet consumer demand for a period of 20 years. The permit granted by the Alberta Government allows the company to export 42 billion cubic feet annually for a period of five years. Before the end of this period, the situation will be reviewed and export amounts adjusted for the remaining 17 years of the permit.

EXPORT OF GAS TO THE EAST

The heavy industries and thick consumer population of Ontario and Quebec provide the largest potential market for Alberta natural gas but the Alberta Government has not yet allowed export of gas to the eastern markets, feeling that sufficient natural gas for Alberta's requirements must be assured first.

Two companies are seeking permission to export natural gas to the East. Western Pipe Lines plans to construct a pipe line from

the Pincher Creek field to Saskatchewan, Manitoba and Minnesota and Canadian Delhi Oil Limited, which is busy proving gas reserves in the Cessford field, plans a subsidiary known as Trans-Canada Pipe Lines Limited which would construct a pipeline east to Toronto and Montreal.

OUTLETS FOR ALBERTA OIL

The provision of additional outlets for crude oil has been the principal problem confronting the Alberta oil industry and the one which best characterizes the development which has taken place in the Province since the Leduc discovery of 1947.

In 1946, Alberta was scarcely producing sufficient oil to supply her own needs and the oil industry was seeking sufficient reserves of natural gas for the production of synthetic gasoline. Refineries were faced with the prospect of importing crude to supplement the dwindling production of Turner Valley, the only significant light crude field. Saskatchewan was principally an importer of crude oil for refinery stock, while Manitoba was dependent on Ontario supplies of refined products made from imported crude. British Columbia was using water borne supplies of crude oil and refined products from California and crude from Venezuela.

The significance of the Leduc discovery soon became apparent to Canadians generally and residents of Western Canada in particular. By the middle of 1949, the entire prairie demand for crude oil had been met as a result of the unprecedented exploration and development program which followed.

The principal sources of the increased production were the Leduc and Redwater fields. These and other discoveries brought Alberta's oil production potential from 20,000 barrels per day in 1946 to 100,000 barrels per day in 1949. Prairie refinery capacity, although greatly expanded following the Leduc discovery, was only capable of handling 55,000 barrels per day. The industry had to look afield for new markets.

The Alberta discoveries were not adjacent to any major oil market. Pipe line construction was essential to overcome high freight

rates. Several terminals for the proposed pipe line were considered. Across the mountains was the British Columbia and Pacific Northwest market area. The small refinery capacity of this region totalling less than 25,000 barrels per day made the Rocky Mountains too formidable a construction barrier for the market to warrant. No concentrated market existed across the United States border to the south. Hence, the decision was made to construct a 1,129 mile line from Edmonton to the head of the lakes at Superior, Wisconsin. This provided an easy prairie route for the line and cheap lake transport for the remainder of the way to a southern Ontario market. The growing prairie demand could be served en route.

Construction was started early in 1950 and completed in 150 days. By the time lake navigation was opened in 1951, it was realized that what had appeared to be an optimistically oversized line in 1950 was actually not equal to the task of keeping ahead of Alberta's production potential. The capacity out of Edmonton was 95,000 barrels per day and maximum lakehead delivery capacity was 70,000 barrels per day. The seasonal nature of lake navigation was a major bottleneck. This situation was aggravated by similar seasonal fluctuations in the growing prairie demand. Production in 1951 averaged 132,000 barrels per day, compared with a production potential of over 200,000 barrels per day.

There were two possible ways of meeting the problem. One was to increase the capacity of the existing pipeline. The other was to construct a line to other markets. It was decided to loop sections of the Superior line and to build additional pumping stations. This raises the flow out of Edmonton to 140,000 barrels per day and the Superior terminal capacity to 95,000 barrels per day. Storage facilities at Superior are being raised from 1,800,000 barrels to 5,000,000 barrels to accommodate production during the winter months. The principal market for oil arriving at Superior is the refineries of southern Ontario, but in the fall of 1951 a refinery in the vicinity of the terminal became the first United States refinery to operate on Canadian crude. The newly constructed unit took approximately 4,000 barrels per day. Another refinery being completed in the area will have a 12,000 barrel per day capacity. This makes the first substantial export of Canadian oil and is another step toward

the day when this nation, on balance, is producing a quantity of crude equivalent to our own requirements.

Even with the increased capacity of the pipeline to the east, it appeared there would be a considerable excess of potential production over the demands of the available market. In addition to mounting reserves in Alberta, there was increasing evidence that each of the other three western provinces might be developing light and medium gravity crude reserves of their own. An indication of the faith that the industry has in development of the western Canadian sedimentary basin was the decision to undertake construction of a pipeline across the mountains to the west coast market area. Construction of the 711 mile 24 - inch line was started in 1952. Completion is expected in August of this year. Initial capacity of the line will be 120,000 barrels per day. By adding more pumping stations this may be raised to 200,000 barrels per day. Vancouver's refinery capacity is being increased to 45,000 barrels. A refinery is being constructed in the vicinity of Bellingham, Washington to process 35,000 barrels per day. As a result of the reduction in the United States tariff on crude oil from .21 cents per barrel to .105 cents, Alberta oil will be able to compete more equitably with California and other crudes for offshore markets. An initial market of 75,000 barrels per day is anticipated. Completion of the Bellingham refinery will raise this throughput to near the line's initial capacity some time in 1954. With California forced to import over 75,000 barrels of crude per day to keep present commitments there will be an opportunity that in the next two or three years the Transmountain pipeline will have a market for its full capacity of 200,000 barrels per day.

In the meantime, plans are being made to connect the Superior terminal of the eastern line with Sarnia by 625 miles of 30-inch pipe with an ultimate capacity of 300,000 barrels per day. Present plans anticipate a flow out of Superior to Sarnia of 84,000 barrels per day which, with the market at Superior will dispose of 100,000 barrels of oil daily.

Meanwhile the prairies are providing the fast growing market in Canada. Refinery capacity in the three provinces has increased from 40,000 barrels per day at the time of the Leduc discovery to 125,000 barrels per day in 1952. In 1953 the prairie market is expected to use an average of approximately 115,000 barrels per day.

The anticipated 1954 market for western oil may be summarized as follows:-

| | |
|-------------------|----------------|
| Prairie Provinces | 115,000 |
| Pacific Coast | 120,000 |
| Eastern Market | 100,000 |
| | <u>335,000</u> |

SIGNIFICANCE OF ALBERTA OIL PRODUCTION

Approximately 96 percent of Canada's total oil production is provided from the Alberta oil fields. The increasing importance of Alberta as the main supplier of Canada's oil needs is more impressive when it is considered in relation to the large and steady increase in Canadian oil consumption. Between 1946 and 1951, the demand for oil products in Canada rose 85 percent. Between 1951 and 1955, this demand is expected to increase by 35 percent. Canada now is second only to the United States in consumption of oil products, with the consumption running about one gallon a day per capita.

In 1952, Alberta supplied approximately one-third of Canadian demand. Total proven reserves of crude oil, estimated by the Petroleum and Natural Gas Conservation Board in June, 1952, are 1,365,000,000 barrels, with experience showing that slightly over eight percent of reserves at the start of a year are withdrawn during the year. Alberta could supply 108,480,000 barrels per year or approximately 297,000 barrels a day.

Alberta's oil industry is a major factor in the tremendous increase in the Province's population. Oil development and its effect on population has stimulated greatly the construction of housing and distribution facilities.

All Canada shares in the economic benefits of Alberta oil.

Replacement of American oil imports by domestic oil production has enabled large savings in American dollars and has helped to raise the value of the Canadian dollar.

Oil development has meant savings for the Canadian people. In 1951, reduced prices for petroleum products freed \$75,000,000 in the Prairie Provinces alone for expenditure on other goods and services.

In Alberta, all the materials for a flourishing petro-chemical industry are available in quantity. Salt, sulphur, lime and hydro-carbons can be used to produce such products as acetylene, alcohols, glycols, glycerine, rubber, carbon disulphide, benzine, detergents, insecticides, and chemicals based on synthetic ammonia such as explosives and fertilizers. Polythene can be made in Alberta since cheap local raw materials offset the high freight rates to the eastern market.

TABLE A
ALBERTA'S PRODUCING OIL AREAS
as of Feb. 9, 1953.

| FIELD | PRODUCING DEPTHS | PRODUCTIVE FORMATION | GRAVITY OF OIL (API) | AGE OF FIELD YEARS | WELLS |
|---------------------------------|------------------|-------------------------|----------------------|--------------------|-------|
| Turner Valley Crude Oil | 6,800-9,600 | Madison | 35-59 | 16) | |
| Turner Valley Gas | 3,200-6,800 | | 55-73 | 28) | 329 |
| Turner Valley Shallow wells ... | 3,200-3,700 | | 49-50 | 38) | |
| Leduc-Woodbend | 5,000-5,400 | Dev. D2, D3; L. Cret... | 35-42 | 6 | 1106 |
| Redwater | 3,300 | Devonian D3 | 33-36 | 4 | 926 |
| Joseph Lake | 3,280 | Viking D2 | 37 | 3 | 87 |
| Acheson-Stony Plain | 3,900-5,500 | Dev. D3 Low, Cret | 37-38 | 2 | 98 |
| Excelsior | 3,800-3,900 | Devonian D2 | 35-36 | 3 | 35 |
| Big Valley | 5,200-5,300 | Devonian D2, D3 | 30-34 | 2 | 39 |
| Armena - Camrose | 3,200 | Viking | 36-38 | 2 | 203 |
| Campbell | 3,700-3,800 | L. Cretaceous | 30-33 | 3 | 16 |
| Duhamel | 4,500-4,800 | Devonian D2, D3 | 34-35 | 2 | 22 |
| Wizard Lake | 6,200 | Blairmore, D2, D3, Vik. | 38 | 1.5 | 35 |
| Golden Spike | 5,500-5,900 | Devonian D3 | 38 | 3 | 11 |
| Del Bonita | 5,200 | Madison | 34-37 | 13 | 11 |
| New Norway | 4,900 | D2 & D3 | 32-39 | 2 | 16 |

(continued)

| FIELD | PRODUCING DEPTHS | PRODUCTIVE FORMATION | GRAVITY OF OIL (API) | AGE OF FIELD YEARS | WELLS |
|--------------------|------------------|---------------------------|----------------------|--------------------|-------|
| Armisie..... | 4,000 | L. Cretaceous..... | 38 | 2 | 10 |
| Bashaw..... | 5,700 | D3..... | 38-41 | 2 | 5 |
| Whitemud..... | 4,100 | L. Cretaceous..... | 35 | 3 | 4 |
| Spring Coulee..... | 6,000-6,100 | Madison..... | 35-37 | 2 | 4 |
| Ellerslie..... | 3,900 | L. Cretaceous..... | 30 | 2 | 6 |
| Bon Accord..... | 3,800-3,900 | Devonian D2..... | 36 | 3 | 11 |
| Barons..... | 4,100 | Viking..... | 34 | 2 | 4 |
| Drumheller..... | 4,500-5,500 | L. Cretaceous..... | 31-34 | 2 | 12 |
| Bonnyville | 1,100-1,200 | Colony Sand..... | 14 | 2 | 12 |
| Lloydminster | 1,900 | L. Cretaceous..... | 9-17 | 13 | 329 |
| Vermilion..... | 1,800 | L. Cretaceous..... | 7-10 | 13 | 36 |
| Stettler..... | 5,400 | Dev. D2, D3, L. Cret..... | 27-30 | 3 | 83 |
| Taber..... | 3,200 | L. Cretaceous..... | 23 | 14 | 21 |
| Conrad..... | 3,100 | L. Cretaceous..... | 26 | 8 | 17 |
| Princess..... | 2,500-3,900 | Devonian..... | 24-32 | 12 | 14 |
| Wainwright..... | 2,200 | L. Cretaceous..... | 20 | 27 | 15 |
| Dina..... | 1,700 | L. Cretaceous..... | 9-14 | 5* | 4 |
| Bennie Glen..... | 6,500-7,600 | Devonian D3..... | 38-40 | 2/3 | 26 |
| Wana..... | 5,200 | Devonian D2, D3..... | 30-33 | 5/6 | 28 |

TABLE A
(continued)

| FIELD | PRODUCING DEPTHS | PRODUCTIVE FORMATION | GRAVITY OF OIL (API) | AGE OF FIELD YEARS | WELLS |
|---------------------|------------------|-----------------------------|----------------------|--------------------|-------|
| Malmö | 4,500-5,200 | L. C. Devonian D2, D3 | 35-40 | 2/3 | 37 |
| Namoo | 3,700-3,800 | L. Cretaceous | 30-33 | 2/3 | 13 |
| Alliance | 3,000 | Viking | 26 | 1/6 | 4 |
| Baxter Lake | 2,200 | L. Cretaceous | 20 | 1/6 | 5 |
| Skaro | 3,900-4,000 | Viking | 38 | 1/6 | 4 |
| South Camrose | 3,200 | Viking | 36 | 1/6 | 7 |
| Glen Park | 6,000-6,200 | Devonian D2 D3 | 35-42 | 1 | 10 |
| Other areas | | | | | 72 |

- Operating January 26, 1953

* Dina first produced in 1929 but present production is from a new pool.

ALBERTA OIL PRODUCTION

TABLE B *

| | 1951 | | | 1952 | | | Increase | |
|--------|---------------|-----------------------------|------------|---------------|-----------------------------|------------|------------|----|
| | Crude bbl. | Natural gasoline bbl. | Total | Crude bbl. | Natural gasoline bbl. | Total | bbl. | % |
| Jan. | 2,810,415 | 53,316 | 2,863,731 | 3,837,499 | 57,665 | 3,895,164 | 1,031,433 | 36 |
| Feb. | 2,605,078 | 48,362 | 2,653,440 | 3,231,539 | 50,757 | 3,282,296 | 628,856 | 24 |
| March | 2,302,976 | 28,103 | 2,331,079 | 3,434,403 | 53,043 | 3,487,446 | 1,156,367 | 50 |
| April | 2,307,875 | 24,233 | 2,332,108 | 3,729,327 | 42,168 | 3,771,495 | 1,439,387 | 62 |
| May | 4,310,781 | 27,030 | 4,337,811 | 5,400,261 | 39,837 | 5,440,098 | 1,102,287 | 25 |
| June | 4,566,598 | 38,950 | 4,605,548 | 5,230,801 | 39,741 | 5,270,542 | 664,994 | 14 |
| July | 4,742,041 | 39,461 | 4,781,502 | 5,646,411 | 41,038 | 5,687,449 | 905,947 | 19 |
| Aug. | 5,139,223 | 42,833 | 5,187,803 | 5,779,663 | 42,092 | 5,821,755 | 633,952 | 12 |
| Sept. | 4,732,770 | 43,268 | 4,776,038 | 5,739,546 | 43,902 | 5,783,448 | 1,007,410 | 21 |
| Oct. | 4,686,139 | 54,579 | 4,740,718 | 5,937,967 | 54,776 | 5,992,743 | 1,252,025 | 27 |
| Nov. | 3,915,802 | 55,360 | 3,971,162 | 5,367,828 | 54,735 | 5,422,563 | 1,471,401 | 37 |
| Dec. | 3,795,686 | 59,532 | 3,855,218 | 5,580,472 | 60,119 | 5,640,591 | 1,785,373 | 46 |
| Totals | 45,915,384 | 515,027 | 46,430,411 | 58,915,773 | 579,873 | 59,495,646 | 13,065,235 | 28 |

* Source (Tables B-H) : Monthly reports of Alberta Petroleum and Natural gas Conservation Board.

PRODUCTION FROM THE REDWATER
FIELD.

TABLE C

| | 1951 bbl. | 1952 bbl. | <u>Increase or decrease</u> | |
|--------|------------------|------------------|-----------------------------|------------|
| | | | <u>bbl.</u> | <u>%</u> |
| Jan. | 1,394,380 | 1,542,664 | †148,284 | †10 |
| Feb. | 1,251,165 | 1,201,759 | - 49,406 | - 4 |
| March | 994,687 | 1,322,430 | †327,743 | †33 |
| April | 1,023,970 | 1,443,852 | †419,882 | †40 |
| May | 2,395,116 | 2,377,947 | - 17,169 | - 0.7 |
| June | 2,507,263 | 2,291,281 | -215,982 | - 8 |
| July | 2,675,558 | 1,565,081 | -1,110,477 | -42 |
| Aug. | 2,856,051 | 2,558,146 | -297,905 | -10 |
| Sept. | 2,505,684 | 2,411,120 | - 94,564 | - 4 |
| Oct. | 2,286,287 | 2,438,188 | †151,901 | † 7 |
| Nov. | 1,712,104 | 1,960,648 | †247,544 | †14 |
| Dec. | <u>1,574,342</u> | <u>1,920,483</u> | <u>†347,141</u> | <u>†22</u> |
| Totals | 23,177,607 | 23,975,842 | †798,235 | † 3 |

N. B. Monthly crude oil production figures have been amended cumulatively to provide a true cumulative production totals for 12 months ending December 31, 1952.

PRODUCTION FROM THE LLOYDMINSTER
FIELD

TABLE D

| | 1951 bbl. | 1952 bbl | <u>Increase or decrease</u> | |
|--------|---------------|----------------|-----------------------------|------------|
| | | | <u>bbl.</u> | <u>%</u> |
| Jan. | 56,518 | 91,211 | †34,693 | †61 |
| Feb. | 74,864 | 89,545 | †14,681 | †19 |
| March | 76,961 | 83,927 | † 6,966 | † 9 |
| April | 43,064 | 81,951 | †38,887 | †90 |
| May | 62,585 | 84,126 | †21,541 | †33 |
| June | 77,253 | 79,646 | † 2,393 | † 3 |
| July | 73,559 | 88,505 | †14,946 | †20 |
| Aug. | 80,460 | 87,112 | † 6,652 | † 8 |
| Sept. | 84,181 | 88,023 | † 3,842 | † 5 |
| Oct. | 90,276 | 90,788 | † 512 | † .6 |
| Nov. | 92,752 | 88,481 | - 4,271 | - 4 |
| Dec. | <u>87,996</u> | <u>104,039</u> | <u>†17,043</u> | <u>†19</u> |
| Totals | 900,469 | 1,057,354 | †156,885 | †17 |

PRODUCTION FROM THE LEDUC-WOODBEND FIELD

TABLE E

| | 1951 | | | 1952 | | | Increase or decrease |
|-------|----------------|-----------------------------|------------|---------------|------------------------------|------------|----------------------|
| | Crude bbls. | Natural gasoline bbls | TOTAL | Crude bbls | Natural gasoline bbls. | Total | |
| Jan. | 841,877 | 2,830 | 844,707 | 1,295,005 | 4,061 | 1,299,066 | +54 |
| Feb. | 804,624 | 2,712 | 807,336 | 1,159,574 | 4,110 | 1,163,684 | +44 |
| March | 714,189 | 2,001 | 716,190 | 1,174,120 | 4,230 | 1,178,350 | +65 |
| April | 756,593 | 2,114 | 758,707 | 1,283,855 | 4,352 | 1,288,207 | +69 |
| May | 1,233,470 | 3,091 | 1,236,561 | 1,682,604 | 3,327 | 1,685,931 | +36 |
| June | 1,332,537 | 3,379 | 1,335,916 | 1,615,354 | 5,314 | 1,620,668 | +21 |
| July | 1,293,539 | 4,252 | 1,297,791 | 1,565,081 | 5,869 | 1,570,950 | +21 |
| Aug. | 1,398,328 | 4,949 | 1,403,277 | 1,600,253 | 6,973 | 1,607,226 | +15 |
| Sept. | 1,367,630 | 3,243 | 1,370,873 | 1,595,135 | 7,183 | 1,602,318 | +17 |
| Oct. | 1,416,452 | 5,235 | 1,421,687 | 1,654,094 | 8,166 | 1,662,260 | +16 |
| Nov. | 1,315,534 | 5,127 | 1,320,661 | 1,545,793 | 7,047 | 1,552,840 | +17 |
| Dec. | 1,268,345 | 4,664 | 1,273,009 | 1,664,751 | 6,790 | 1,671,541 | +31 |
| Total | 13,743,118 | 43,597 | 13,786,715 | 17,845,212 | 67,422 | 17,922,634 | +29 |

N. B. Monthly crude oil production figures have been amended cumulatively to provide a true cumulative production totals for 12 months ending December 31, 1952.

PRODUCTION FROM THE JUMPING POUND FIELD

TABLE F

| | 1951 | | | 1952 | | | Increase or decrease | |
|--------|----------------|------------------------------|--------|----------------|-----------------------------|--------|----------------------|-----|
| | Crude bbls. | Natural gasoline bbls. | Total | Crude bbls. | Natural gasoline bbls | Total | bbls. | % |
| Jan. | | | | 6,859 | 2,787 | 9,646 | | |
| Feb. | | | | 6,304 | 2,135 | 8,439 | | |
| Mar. | | | | 6,850 | 2,235 | 9,085 | | |
| April | | | | 5,945 | 1,718 | 7,663 | | |
| May | | 1,674 | | 5,330 | 1,301 | 6,631 | | |
| June | 4,503 | 1,520 | 6,023 | 3,600 | 1,038 | 4,638 | - 1,385 | -23 |
| July | 3,664 | 1,401 | 5,065 | 4,550 | 1,053 | 5,603 | + 538 | +11 |
| Aug. | 4,242 | 1,438 | 5,680 | 4,615 | 1,464 | 6,079 | + 399 | + 7 |
| Sept. | 3,880 | 1,366 | 5,246 | 4,451 | 1,414 | 5,865 | + 619 | +12 |
| Oct. | 4,962 | 1,750 | 6,712 | 5,179 | 1,373 | 6,552 | - 160 | - 2 |
| Nov. | 6,002 | 2,063 | 8,065 | 7,847 | 1,672 | 9,519 | + 1,454 | +18 |
| Dec. | 6,992 | 2,445 | 9,437 | 5,727 | 1,393 | 7,120 | - 2,317 | -24 |
| Totals | 41,936 | 13,657 | 55,593 | 67,257 | 19,583 | 86,840 | + 31,247 | +54 |

PRODUCTION FOR THE TURNER VALLEY FIELD

TABLE G

| | 1951 | | | 1952 | | | Increase or decrease | |
|-------|----------------|-----------------------------|----------------|----------------|-----------------------------|---------------|----------------------|-----|
| | Crude bbls. | Natural gasoline bbl. | Total bbls. | Crude bbls. | Natural gasoline bbl. | Total bbl. | bbls. | % |
| Jan. | 275,420 | 50,486 | 325,906 | 251,432 | 50,817 | 302,249 | -23,657 | -7 |
| Feb. | 260,090 | 45,650 | 305,740 | 233,268 | 44,512 | 277,780 | -27,960 | -9 |
| Mar. | 275,112 | 26,102 | 301,214 | 247,434 | 45,578 | 293,012 | - 8,202 | -3 |
| April | 253,671 | 22,119 | 275,790 | 229,798 | 36,098 | 265,896 | - 9,894 | -3 |
| May | 248,090 | 22,265 | 270,355 | 216,139 | 35,209 | 251,348 | -19,007 | -7 |
| June | 221,375 | 34,051 | 255,426 | 202,077 | 33,389 | 168,688 | -86,738 | -34 |
| July | 222,459 | 33,808 | 256,267 | 203,112 | 34,116 | 237,228 | -19,039 | -7 |
| Aug. | 235,756 | 36,446 | 272,202 | 198,528 | 33,655 | 232,183 | -40,019 | -15 |
| Sept. | 223,790 | 38,659 | 262,449 | 207,812 | 35,305 | 243,117 | -19,332 | -8 |
| Oct. | 246,617 | 47,594 | 294,211 | 235,281 | 45,237 | 280,281 | -13,930 | -5 |
| Nov. | 240,098 | 48,170 | 288,268 | 207,830 | 46,016 | 253,846 | -34,442 | -11 |
| Dec. | 249,829 | 59,532 | 309,361 | 222,533 | 51,936 | 274,469 | -34,892 | -11 |
| Total | 2,952,307 | 464,882 | 3,417,189 | 2,655,007 | 491,858 | 3,079,997 | -337,192 | -9 |

N. B. Monthly crude oil production figures have been amended cumulatively to provide a true cumulative production totals for 12 months ending December 31, 1952.

PRODUCTION FROM FIELDS NOT OTHERWISE

TABULATED

| | 1952 | TABLE H 1951 | Increase or decrease | |
|------------------|-----------|------------------------|----------------------|--------|
| | | | bbls. | % |
| Acheson | 2,016,855 | 918,158 | 1,098,697 | +119 |
| Alliance | 16,181 | 7,271 | 8,910 | +122 |
| Armena-Camrose | 1,307,526 | 63,078 | 1,244,438 | +1,974 |
| Armisie | 103,594 | 25,293 | 78,301 | +309 |
| Barons | 33,693 | 22,788 | 10,905 | + 47 |
| Bashaw | 56,493 | 11,318 | 45,175 | +399 |
| Baxter Lake | 20,125 | 2,449 | 17,676 | +640 |
| Big Valley | 657,875 | 155,580 | 502,295 | +329 |
| Bon Accord | 83,526 | 14,717 | 68,809 | +467 |
| Bonnie Glen | 743,490 | No production for 1951 | | |
| Bonnyville | 20,871 | 10,134 | 10,687 | +104 |
| Campbell | 45,650 | 60,436 | 14,786 | - 32 |
| Clive | 33,452 | 3,349 | 30,103 | +898 |
| Conrad | 135,037 | 142,497 | 7,460 | - 5 |
| Del Bonita | 41,205 | 30,344 | 10,861 | + 35 |
| Dina | 19,694 | 12,646 | 7,048 | + 55 |
| Drumheller | 175,688 | 13,317 | 162,371 | +1,220 |
| Duhamel | 347,140 | 184,582 | 162,558 | + 88 |
| Ellerslie | 44,975 | 20,774 | 23,721 | +113 |
| Fenn | 343,766 | 9,648 | 355,118 | +3,680 |
| GlenPark | 282,719 | 22,443 | 260,276 | +1,159 |
| Golden Spike | 1,279,103 | 640,972 | 638,131 | + 99 |
| Joseph Lake | 998,268 | 727,936 | 270,332 | + 37 |
| Malmo | 270,474 | No Production for 1951 | | |
| Namao | 41,333 | 4,972 | 36,361 | +731 |
| NewNorway | 287,988 | 20,664 | 267,324 | +1,293 |
| North Big Valley | 74,446 | No Production for 1951 | | |
| Princess | 72,970 | 92,189 | 19,219 | - 26 |
| Skaro | 7,026 | No Production for 1951 | | |
| South Camrose | 30,799 | No Production for 1951 | | |
| Spring Coulee | 7,271 | 9,297 | 2,006 | -27 |
| Stettler | 607,078 | 606,068 | 1,010 | + .1 |
| Taber | 81,464 | 182,449 | 100,985 | -123 |
| Vermilion | 39,058 | 44,557 | 5,499 | - 14 |
| Wainwright | 27,850 | 14,233 | 13,612 | + 36 |
| Whitemud | 20,010 | 25,803 | 5,793 | - 28 |
| Wizard Lake | 1,696,077 | 190,595 | 1,505,482 | +789 |

(Thousands of Barrels Daily)

| | <u>1939</u> | <u>1950</u> | <u>1951</u> | <u>1952</u> |
|-------------------------------|-------------|-------------|-------------|-------------|
| NORTH AMERICA | | | | |
| United States | 3,465.7 | 5,407.0 | 6,149.0 | 6,252.4 |
| Canada | 19.1 | 78.3 | 130.5 | 166.4 |
| Mexico | 162.0 | 199.0 | 210.2 | 211.8 |
| Total | 3,646.8 | 5,684.3 | 6,489.7 | 6,630.6 |
| SOUTH AMERICA | | | | |
| Venezuela | 567.0 | 1,498.0 | 1,704.6 | 1,796.6 |
| Colombia | 65.5 | 91.0 | 105.3 | 107.2 |
| Argentina | 51.0 | 64.0 | 66.9 | 67.0 |
| Trinidad | 52.8 | 56.5 | 57.1 | 57.3 |
| Peru | 37.1 | 41.2 | 44.0 | 44.6 |
| Ecuador | 6.3 | 7.2 | 7.4 | 7.8 |
| Bolivia | 0.6 | 1.7 | 1.4 | 1.5 |
| Cuba | 0.3 | 0.3 | 0.3 | 0.1 |
| Brazil | - | 0.8 | 1.9 | 2.2 |
| Chile | - | 1.7 | 2.0 | 2.0 |
| Total | 780.6 | 1,762.4 | 1,990.9 | 2,086.3 |
| WESTERN HEMISPHERE | | | | |
| | 4,427.4 | 7,446.7 | 8,430.6 | 8,716.9 |
| EUROPE | | | | |
| Romania | 128.5 | 88.5 | 100.0 | 90.0 |
| Austria | 11.7 | 28.4 | 44.0 | 43.5 |
| Germany | 12.3 | 21.6 | 26.5 | 33.4 |
| Hungary | 3.0 | 11.5 | 10.5 | 9.5 |
| Poland | 10.7 | 3.3 | 3.7 | 3.8 |
| Netherlands | - | 13.4 | 13.6 | 13.7 |
| Albania | 2.5 | 3.0 | 3.0 | 3.0 |
| France | 1.4 | 2.5 | 5.6 | 7.0 |
| French Morocco | - | 0.8 | 1.6 | 2.0 |
| United Kingdom | 0.1 | 0.9 | 0.9 | 1.1 |
| Czechoslovakia | 0.2 | 0.8 | 1.9 | 2.5 |
| Yugoslavia | - | 2.6 | 3.2 | 3.2 |
| Italy | 0.2 | 0.2 | 0.4 | 1.0 |
| Total(excluding USSR) | 170.6 | 177.5 | 214.9 | 213.7 |
| USSR | 663.0 | 730.0 | 842.0 | 940.0 |
| Total | 773.6 | 937.5 | 1,056.9 | 1,153.7 |
| NEAR AND MIDDLE EAST | | | | |
| Iran | 214.0 | 665.5 | 350.0 | 31.5 |
| Saudi Arabia | 10.8 | 546.7 | 761.5 | 821.8 |
| Iraq | 84.5 | 136.2 | 174.6 | 372.5 |
| Kuwait | - | 345.0 | 563.0 | 750.1 |
| Bahrain | 20.8 | 30.0 | 30.0 | 30.0 |
| Qatar | - | 33.7 | 49.6 | 67.3 |
| Egypt | 12.8 | 45.3 | 44.7 | 45.2 |
| Turkey | - | 0.2 | 0.4 | 0.5 |
| Total | 342.9 | 1,802.6 | 1,973.8 | 2,118.9 |
| FAR EAST & OCEANIA | | | | |
| Indonesia | 170.0 | 132.5 | 151.7 | 168.7 |
| British Borneo | 20.0 | 84.8 | 103.0 | 104.8 |
| New Guinea | - | 4.8 | 4.8 | 4.6 |
| India | - | 5.3 | 5.0 | 5.2 |
| Pakistan | 28.0 | 3.5 | 3.6 | 4.1 |
| Burma | - | 1.6 | 2.2 | 2.2 |
| Japan | 7.3 | 5.6 | 6.4 | 5.8 |
| China | - | 2.0 | 2.0 | 2.0 |
| Total | 225.3 | 240.1 | 279.0 | 297.4 |
| EASTERN HEMISPHERE | | | | |
| | 1,341.8 | 2,980.2 | 3,309.7 | 3,570.0 |
| WORLD TOTAL | | | | |
| | 5,769.2 | 10,426.9 | 11,790.3 | 12,286.9 |

